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NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

**THE SECURE FENCE ACT: THE EXPECTED IMPACT
ON ILLEGAL IMMIGRATION AND
COUNTERTERRORISM**

by

Joseph W. Browning

December 2008

Thesis Advisor:
Second Reader:

Letitia Lawson
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**THE SECURE FENCE ACT: THE EXPECTED IMPACT ON ILLEGAL
IMMIGRATION AND COUNTERTERRORISM**

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ABSTRACT

The events of 11 September 2001 were a watershed moment in American history; one that has catapulted national security back to the center stage. In response to the growing fears of terrorism and the heightened concern for illegal immigration that subsequently followed, President Bush signed the Secure Fence Act in October 2006, thus entangling two very distinct issues: counterterrorism, and illegal immigration. The legislation authorized the construction of 700 hundred miles of double-layered fencing in addition to cameras, ground radar and improved lighting along the U.S.-Mexican border. The proposed border fence was designed to prevent “unlawful entry into the United States, including entries by terrorists, other unlawful aliens and instruments of terrorism.” This thesis examines the probable effectiveness of the border fence on illegal immigration and counterterrorism, by analyzing other such structures in the context of these two very different phenomena. This study investigates the border fence in San Diego, California and its affect on illegal immigration in addition to the security fence along Israel’s border with Gaza to explore its effect on terrorism. The study suggests that fences can prove effective in curbing illegal immigration but are less successful in combating terrorism.

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I. THE SECURE FENCE ACT: THE EXPECTED IMPACT ON ILLEGAL IMMIGRATION AND COUNTERTERRORISM

A. MAJOR RESEARCH QUESTION

In the days following September 11, 2001, U.S. public attention on counterterrorism and illegal immigration increased dramatically. The government's perceived lax attitude toward border security led to wide-spread concern. While most Americans were not worried about suicide bombers along their southern border, they were concerned with clandestine transnational actors that "evade law enforcement efforts...to potentially carry out religiously inspired acts of violence."¹ In response to new threats to border security, President George W. Bush signed the Secure Fence Act in October 2006.² The legislation authorized the construction of 700 hundred miles of double-layered fencing in addition to cameras, ground radar and improved lighting along the U.S.-Mexico border.³ The proposed border fence was designed to prevent "unlawful entry into the United States, including entries by terrorists, other unlawful aliens and instruments of terrorism."⁴ The Secure Fence Act thus entangled two very distinct issues: counterterrorism and illegal immigration. Critics have questioned the effectiveness of such a fence on the U.S.-Mexico border in addressing these perceived threats. This thesis will examine the probable effectiveness of the border fence on illegal immigration and counterterrorism.

¹ Peter Andreas, "Redrawing the Line: Borders and Security in the Twenty-First Century," *International Security* 28, no. 2 (Fall 2003), 78.

² *Secure Fence Act of 2006*, Public Law Public Law 109-367-October 26, 2006, Sec. 2.

³ Richard Marosi, "Border Fence nearly Doubles; After Reporting Sluggish Progress Last Month, U.S. Officials Announce the Stretch of Barriers has Grown to 145 Miles." *Los Angeles Times*, September 29, 2007.

⁴ *Secure Fence Act of 2006*, Sec. 2-Sec. 3.

B. IMPORTANCE

It is essential for officials in government to evaluate and analyze the effectiveness of these types of measures. Given the enormous costs associated with the proposed border fence, it is important to consider the long-term impact on illegal immigration and counterterrorism. If history is any indicator, the United States will continue to attract illegal immigrants and remain the target of terrorism. Consequently, government leaders have a responsibility to safeguard our borders and protect the American public from acts of terror using the most efficacious instruments available. The objective of this study is to resolve the on-going debate between the proponents and opponents of the U.S. border fence by developing an empirical analysis of its likely impact on immigration and terrorism.

C. PROBLEMS AND HYPOTHESES

This study has two arguments. The first is that it is very likely that the new border fence, with the appropriate staffing of USBP personnel, will have a significant impact on illegal border-crossings. The analysis in chapter two suggests that the proposed border fence will be a robust deterrent and will discourage many from attempting illegal entry. The second argument is that the border fence is unlikely to prevent acts of terror within the continental United States. Terrorists are highly adaptive and are capable of overcoming even the most complex barriers systems. The analysis in chapter three suggests that terrorists can skillfully exploit vulnerabilities to their advantage in an effort to marginalize the security effect of the fence.

D. LITERATURE REVIEW

There are two schools of thought regarding the likely effects of the border fence on illegal immigration and counterterrorism. The first argues that the border fence is likely to have a significant impact on reducing the flow of both illegal immigrants and terrorists into the United States from Mexico. Paul Staniland, addressing strategies to combat transnational insurgencies, asserts that the first priority is to build and maintain

defensive barriers, including the border fence.⁵ “Isolating the insurgents’ men and materiel from the primary arena of warfare reduces their ability to make military and political gains, cutting off insurgent’s contact with and assistance from external sanctuaries and diasporas.”⁶ He is not alone in this view. Jonathyn Rynhold, of Bar Ilan University, also advocates the utility of security fences. Discussing the security fence between Israel and the West Bank, he acknowledges that the “security barrier is hardly an optimal strategy,” but concludes that the “barrier could turn out to be the best means available for managing a deadly conflict.”⁷ Scholars in this camp point to the results of two such barrier systems. The first was erected in San Diego, California in 1990 to reduce the flow of illegal immigrants from Mexico into the United States.⁸ The fence originally ran 14 miles in length and consisted of a single primary fence.⁹ It was later reinforced with a secondary fence and better resourced in terms of personnel and equipment. Where deployed, the fence reduced the number of captured illegal immigrants from 361,125 persons in FY 1992 to 19,035 persons in FY 2004. The second example is Israel’s security fence along the Gaza Strip. In April 2004, David Makovsky wrote “since early 2001, not a single successful Palestinian suicide bomber has infiltrated Israel from Gaza, and mortar shells fired from within the territory have failed to kill any Israelis.”¹⁰ According to him:

A properly constructed fence could achieve multiple objectives: reduce violence by limiting the infiltration of suicide bombers into Israel, short-circuit the deadlock on achieving a two-state solution, advance the debate in Israel about the future of most settlements, and perhaps even provide an incentive for Palestinians to return to the negotiating table. Even without

⁵ Paul Staniland, "Defeating Transnational Insurgencies: The Best Offense is a Good Fence," *The Washington Quarterly* 29, no. 1 (Winter 2005), 31.

⁶ Paul Staniland, "Defeating Transnational Insurgencies: The Best Offense is a Good Fence," *The Washington Quarterly* 29, no. 1 (Winter 2005), 31.

⁷ Jonathan Rynhold, "Israel's Fence: Can Separation make Better Neighbors?" *Survival* 46, no. 1 (Spring 2004), 72.

⁸ Blas Nunez-Neto and Stephen Vina, *Border Security: Barriers Along the U.S. International Border*, Congressional Research Service, The Library of Congress, [2006]).

⁹ Ibid.

¹⁰ David Makovsky, "How to Build a Fence," *Foreign Affairs* 83, no. 2 (March/April 2004), 52.

negotiation, the fence would function as a provisional border and could be modified in the future if Palestinians make real progress in halting terrorism against Israel and agree to restart talks.¹¹

The second school of thought argues that the fence will not make a discernable contribution to combating illegal immigration or counterterrorism. Scholars in this camp argue that “it should not be immediately assumed that the newest and most advanced technologies—the highest wall, the most sensitive surveillance—will best protect society from terrorist attack.”¹² Tony Payan argues that the U.S. has pumped billions of dollars into fortifying the borders with little success and that these strategies are inadequate to deal with the complex challenges of illegal immigration.¹³ Brian Jackson asks: “If migrants and smugglers respond to border fencing and surveillance by regularly damaging the fence and its associated systems, how will a constant stream of repair efforts affect DHS’s security efforts?”¹⁴ This group suggests that vulnerabilities can be identified and quickly exploited, minimizing the impact of the fence. In the case of illegal immigration, they argue that while the number of apprehensions was sharply reduced in the San Diego area, the number of apprehensions to the east of the fence skyrocketed, indicating a significant net increase in illegal immigration. As the number of illegal immigrants captured in San Diego dropped by about 300,000, the number captured at the border in the Tucson region grew from 71,036 persons in FY 1992 to 490,827 persons in FY 2004.¹⁵ This suggests that illegal immigrants simply went around the fence—following the path of least resistance, which in this case was through the Tucson area. This camp argues that terrorists will follow a similar path of least resistance, and thus the fence will not make a significant contribution to counterterrorism

¹¹ David Makovsky, “How to Build a Fence,” *Foreign Affairs* 83, no. 2 (March/April 2004), 52

¹² Brian A. Jackson, *Breaching the Fortress Wall: Understanding Terrorist Efforts to Overcome Defensive Technologies* (Santa Monica, CA: RAND Homeland Security, 2007), 10.

¹³ Tony Payan, *The Three U.S.-Mexico Border Wars: Drugs, Immigration, and Homeland Security* (Westport, Conn.: Praeger Security International, 2006), 122.

¹⁴ House of Representatives Subcommittee on Technology and Innovation, *Developing Robust Border Security Technologies to Protect Against Diverse and Adaptive Threats*, 2007, 10, http://rand.org/pubs/testimonies/2007/RAND_CT294.pdf (accessed March 15, 2008).

¹⁵ Nunez-Neto and Vina, *Border Security: Barriers Along the U.S. International Border*, 38.

efforts. These conclusions are based on analysis of Israel. They suggest that counterterrorism measures such as the Gaza fence will be met with innovative tactics that seek to minimize its intended effects.¹⁶ In other words, terrorists will substitute their old tactics for new tactics that exploit vulnerabilities elsewhere. This lesson can be applied to U.S.-Mexico border as well; potential terrorists operating in that region could simply change their tactics and nullify the perceived benefits of the border fence. In addition, critics argue that terrorists will simply enter legally and/or be recruited within the United States—side-stepping the border entry problems—or simply enter from Canada or an unfenced portion of the US-Mexico border.¹⁷ In short, the fence—stretching only 700 of the nearly 2,000 miles—can be too easily avoided, cut or climbed, rendering it ineffective.¹⁸ Terrorists can adapt far quicker than the U.S. can build and reinforce the fence.

Both schools of thought assert that the impact of the fence will be the same for immigration and terrorism. This thesis challenges this, arguing that because the motivations and level of commitment of immigrants and terrorists are different, the impact of the fence is likely to be different for the two groups. This study will enhance the granularity on the subject of border fences by examining how they affect the calculations of migrant workers and terrorists differently. I will argue that the proposed border fence is likely to be effective with regard to illegal immigration but have a negligible impact to U.S. counterterrorism efforts, using indirect evidence from the border fence in San Diego and the Gaza fence from Israel.

¹⁶ Walter Enders and Todd Sandler, "What do we know about the Substitution Effect in Transnational Terrorism?" Alabama, California, 2002), <http://www-rcf.usc.edu/~tsandler/substitution2ms.pdf> (accessed Oct 7, 2008).

¹⁷ "Border Fence Called Impractical; Experts Say Illegal Immigrants Will Enter Elsewhere," *The Washington Post*, October 3, 2006.

¹⁸ Jackson, *Developing Robust Border Security Technologies to Protect Against Diverse and Adaptive Threats*, 6.

E. METHODS AND SOURCES

This thesis will utilize process tracing, deductive analysis and the comparative study method. Two existing fences were selected for study based on their objectives: one to deter peaceful illegal immigrants and one to deter aggressive terrorist. The San Diego fence is an important starting point for this discussion. It provides an historical anchor point that will enable a greater understanding of the U.S.-Mexico border, and what effects the proposed border fence is likely to have based on historical experience. The Gaza fence is better suited to a study of the likely impact of the U.S.-Mexico fence on terrorism because of the higher rate of terrorists there. These examples are somewhat polarized, each emphasizing a different objective, enabling a more thorough analysis of the material. The thesis relies heavily on sources from the governments of the United States and Israel, pertaining to illegal immigration, terrorism, border security and security fences, as well as the secondary literature. The next chapter discusses the effectiveness of the San Diego fence in reducing illegal immigration, and chapter three discusses the effect of fences on terrorism more deductively, using evidence from the Gaza fence in Israel as illustration. The final chapter brings together the insights from chapters two and three, and to attempt to project the most likely results of the new U.S. border fence.

II. SAN DIEGO: FENCES, BORDER AGENTS AND ILLEGAL IMMIGRATION

A. INTRODUCTION

Well designed and constructed fences should have some deterrent effect on illegal immigration. But a determined migrant can climb over or cut through a fence, so the deterrent is never absolute, and sometimes not even significant. A fence is a passive measure, which cannot anticipate or react. It cannot make an arrest or alert authorities to trouble. These are the responsibilities of border agents and the advanced technology they employ. Thus any assessment of the extent to which border fencing deters illegal immigration must take into account both the fence itself and the human and technological supports that can operate with or without a fence. This chapter will examine the effectiveness of new security measures deployed within the San Diego sector of the U.S.-Mexico border between 1992 and 2004. These measures included erecting fences, installing stadium style lighting and advanced sensors, and changing the staffing levels of U.S. Border Patrol (USBP) personnel. The vast majority of the border is desolate, marked by rugged terrain and extreme climate conditions. It stretches nearly 2,000 miles, and spans four states: California, Arizona, New Mexico and Texas. These states are then divided into 9 border sectors (Figure 1).¹⁹ The sectors vary in size and topography, and are policed by a varying number of border agents. Despite being the smallest, the San Diego sector was far and away the busiest in terms of arrests of illegal immigrants in the early 1990s, with nearly half of all apprehensions along the entire southwestern (SW) border occurring there. However, there was a fairly sudden and dramatic decline in San Diego's share of apprehensions in the mid-1990s, falling from 40+% in 1993-1995 to 32% in 1996, 21% in 1997, and then settling around 12% after 1998. This suggests that

¹⁹ Richard M. Stana, *Secure Border Initiative: Observations on the Importance of Applying Lessons Learned to Future Projects* (Washington D.C.: Government Accounting Office, [2008]).

some or all of the new security measures were effective. However, a more micro level analysis is needed to determine which measure or measures were responsible for the reduction in illegal immigration, and why.



Figure 1. Map of Border Patrol Sectors Along the Southwest Border²⁰

Unfortunately, there is no reliable data on the number of illegal migrants that successfully enter the United States in a given year. Thus, it is not possible to measure illegal immigration directly. Instead, this study uses apprehension data obtained from the USBP to measure the level of illegal immigration indirectly. Apprehensions are simply the number of arrests made by border agents of aliens attempting illegal entry into the United States. Illegal aliens have been known to make multiple attempts to cross the border; therefore these statistics reflect the number of arrests, not necessarily the number of persons.²¹ Since the number of persons attempting to cross the border illegally is unknown, we cannot calculate the success rate of security measures. For instance, if USBP personnel captured 100 out of 1,000 known persons to have attempted to cross the border illegally, they would have achieved a 10% success rate. But since the total

²⁰ From Richard M. Stana, *Secure Border Initiative: Observations on the Importance of Applying Lessons Learned to Future Projects* (Washington D.C.: Government Accounting Office, [2008]).

²¹ Blas Nunez-Neto and Yule Kim, *Border Security: Barriers Along the U.S. International Border* (Washington DC: Congressional Research Service, [2008]).

number attempting to cross is unknown, we can only track trends in apprehensions. An increase in apprehensions could indicate larger flows of illegal immigrants and a fixed success rate, or it could indicate a fixed flow of illegal immigrants and an increased success rate (e.g., due to the construction of a fence, an increase in personnel, and/or deployment of improved technology). Conversely, a reduction in apprehensions could be also be interpreted in several ways. A drop in apprehensions might reflect the poor policies or practices of the USBP (e.g. failing to deploy their agents along high traffic routes). A drop in apprehensions during a reduction in manning could infer that fewer agents are abducting fewer illegal immigrants. Finally, it could also be interpreted as an indication of success. For instance, if the number of apprehensions was falling while the number of agents was increasing, it would provide strong evidence that illegal migration has slowed or shifted elsewhere. This, this study will interpret a drop in illegal immigration as an indication of success. While apprehension data is a rough gauge of the level of illegal immigration, it remains the best available indicator and this analysis will therefore employ it cautiously to measure illegal immigration.

This chapter draws upon reports produced by the Congressional Research Service as its primary data sources.²² Two of these reports focus on the San Diego fence, while the other discusses the larger role of U.S. Border Patrol. All three reports provide government statistics regarding numbers of agents, numbers of apprehensions, barriers constructed and fiscal considerations toward border security strategies. These reports conclude that fencing in San Diego successfully deterred illegal immigration, rerouting it to other sectors along the SW border based on comparisons of apprehension trends in unfenced and fenced areas. However, the reports focus on border fences exclusively, failing to consider the effect of higher numbers of border agents and their technological arsenal, which increased significantly in the same period. The following analysis disaggregates the independent effects of staffing increases and fencing on illegal

²² Unless otherwise stated, the information in this chapter comes from the following sources: Blas Nunez-Neto and John Garcia Michael, *Border Security: The San Diego Fence* (Washington D.C.: Congressional Research Service, Library of Congress,[2007]); Nunez-Neto and Vina, *Border Security: Barriers Along the U.S. International Border*, 2; Blas Nunez-Neto, *Border Security: The Role of the U.S. Border Patrol* (Washington DC: Congressional Research Service,[2006]).

immigration in San Diego. Specifically, it isolates the effects “human barriers” had on illegal immigration and then compares those results to the net outcome when a fence or barrier was added to the equation. The next section studies the unfenced areas during this time, evaluating the effectiveness of border agents alone as their numbers rose and then fell over time. The next section studies the fenced areas, evaluating the effectiveness of human and physical barriers combined. Increased numbers of USBP personnel using improved technology and the border fence are each found to have significantly reduced illegal immigration on their own, and to have had a more dramatic effect in combination. Taken together, this suggests that the reduction in illegal immigration in the San Diego sector is attributable to both increased staffing and fence construction, with the most pronounced reduction occurring when and where both fencing and improved border patrol were in place.

B. UNFENCED BORDER AREAS

Between 1992 and 2004 78% of the border in the San Diego sector (52 of 66 miles) was unfenced. The unfenced area was comprised of three border stations: El Cajon, Campo and Brown Field. These stations abutted a sparsely populated Mexican landscape with rugged terrain and natural barriers such as mountains, deep ravines and desert. It was therefore not conducive to fencing, given the difficult construction requirements and environmental challenges. However, the rugged terrain itself provided USBP agents some advantage over illegal migrants.

On October 1, 1994, the start of fiscal year 1995, the USBP commenced Operation Gatekeeper in the San Diego sector.²³ Phased in between October 1994 and June 1998, Gatekeeper increased personnel and equipment enormously. In 1993 there were 992 border agents in the sector (Table 1). That figure climbed to 1,290 agents the following year, a 30% increase. Between 1994 and 1995 staffing levels increased another 12%. In 1996 staffing levels grew by another 36%, and peaked in 1997 at 2,281. Beginning in 1998, manning declined incrementally, reaching 2,004 agents in 2001, and

²³ Joseph Nevins, *Operation Gatekeeper: The Rise of the "Illegal Alien" and the Making of the U.S.-Mexico Boundary* (New York: Routledge, 2002), 92.

then falling more sharply to 1,807 in 2002. Staffing levels then increased to 1,972 agents in 2003, before abruptly dropping to 1,651 in 2004. Between 1994 and 1998 the number of seismic sensors, used to detect illegal incursions along the border, increased by 171%, the number of vehicles increased by 152% to keep pace with the increased staffing levels, while helicopters increased from 6 to 10. Finally, the number of infrared night-vision goggles (NVGs) increased from 12 to 49, providing border agents an improved ability to detect intruders during periods of darkness. Advancements in technology can make important contributions to law enforcement agencies such as the USBP. Equipment such as seismic sensors and night vision goggles—in the hands of a trained agent—enable improved indications and warnings (I&W) of potential interlopers. Obviously, a border agent equipped with NVGs during night time operations stands a much better chance of detecting an intruder than an agent depending on his or her eyesight alone. Likewise an advanced sensor, such as seismic equipment, can provide enhanced I&W. While it cannot physically apprehend a suspect, it can signal authorities that the perimeter has been breached, the location of the incident, and the approximate numbers of intruders as well as the route of travel. In this way, it has been characterized as a force multiplier—enabling law enforcement officials to operate more precisely and efficiently. Overall then, more agents with improved mobility and employing an enhanced arsenal of advanced technology were put in place. Detailed data on staffing and technology disaggregated by fenced v. unfenced portions of the sector are not available, but the USBP reports that staffing and technology changes were implemented evenly across the sector.²⁴

1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
992	1290	1433	1,965	2,281	2,274	2,136	2,053	2,004	1,807	1,972	1,651

Table 1. Authorized USBP Personnel in San Diego Sector, 1993-2004²⁵

²⁴ Agents were deployed in a 3-tier, layered defense. The first tier of agents was assigned at fixed locations along the border. These agents were in charge of apprehending suspects and preventing entry across the border. The second tier was deployed to heavily traveled corridors used by illegal aliens. The third tier was highly mobile and manned vehicle checkpoints inland to apprehend aliens who managed to get through the first two tiers.

²⁵ After Jason Ciliberti, Supervisory Border Patrol Agent, Authorized USBP Personnel on SW Border By Sector and Fiscal Year, Aug 13, 2008.

In 1994, when the number of border patrol agents increased by 30%, apprehensions fell by 27%. If the flow of illegal immigrants and the efficiency of each border patrol agent had remained constant, one would expect apprehensions to have increased with the additional agents on the ground. The fact that apprehension fell thus suggests a reduction in the number of aliens attempting to cross the border illegally, since there is no logical reason to think that more and better equipped agents would have become less efficient. However, we cannot conclude that the increased border patrol acted as an effective deterrent in this year for two reasons. First, apprehensions fell in six of the nine sectors of the border that year, suggesting that illegal immigration was down across the board for reasons unrelated to border policing. Second, in 1995 and 1996 apprehensions in unfenced areas of San Diego increased by 41% and 11%, respectively, suggesting that after smoothing out annual fluctuations arrests per agent remained largely stable through 1996 (Table 2). This trend would indicate that the additional staffing and technology put in place between 1994 and 1996, notwithstanding the anomaly of 1994, did not present an immediate deterrent to illegal immigration.

FY1992	FY1993	FY1994	FY1995	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004
204,456	210,129	155,386	262,505	297,423	189,321	160,781	140,640	113,866	85,815	87,195	96,752	119,293

Table 2. Apprehensions in Unfenced Areas of the San Diego Sector, 1992-2004

However, the evidence suggests that increased apprehensions resulting from increased staffing and technology at the unfenced portion of the border in 1995 and 1996 did have an effect on the networks of illegal immigrants. As more were caught, arrested and returned to Mexico, word-of-mouth feedback about the increased security discouraged illegal aliens from attempting entry through the unfenced portions of the San Diego sector. As a result, in 1997 the number of apprehensions fell by a dramatic 36%, initiating a longer term trend of falling apprehensions. Illegal migration began shifting away from the unfenced areas of the San Diego sector and toward the neighboring unfenced sector of El Centro, where there were only 249 border agents to patrol the 34 miles of border, or 7 agents per mile compared to 34 agents per mile in San Diego. The number of apprehensions in El Centro skyrocketed from 66,873 in 1996 to 146,210 in 1997. Thus, the 108,102 drop in apprehensions in unfenced San Diego was accompanied

by a 79,337 increase in apprehensions in El Centro, indicating that El Centro became the preferred entry point for nearly three quarters of the illegal immigrants that would have normally attempted entry through San Diego. This evidence increases our confidence that illegal migration did indeed shift in response to an increased deterrent provided by higher levels of staffing and technology in unfenced San Diego.

Between 1998 and 2001 the number of border patrol agents across the sector fell by 11% (270 agents), while apprehensions in unfenced areas dropped by nearly half (from 160,781 to 85,815). This suggests that migration patterns continued to respond to more effective security, despite incremental reductions.²⁶ As apprehensions declined in the sector, some border agents were marshaled to other priority areas, with approximately two thirds of the agents that were cut from San Diego during this time transferred to El Centro in response to shifting migration patterns, while keeping staffing in San Diego at a level that was sufficient to maintain the deterrent there. However, between 2001 and 2004 (the end of the period of analysis) staff levels fell more significantly, and apprehensions in unfenced San Diego began to increase as a result. Staffing in the sector averaged 1,815 in 2002-2004, down from 2,150 in 1997-2001, which seems to have encouraged illegal aliens to retest the security measures in the unfenced areas.

In summary, after a lag of about three years during which illegal migrants became more aware of the increased security along the unfenced portion of the border in the San Diego sector, increasing staffing and technology provided a significantly increased deterrent to illegal migration, leading to a reduction from the high point in 1996 to the low point in 2001 of 71%, or 211,608 apprehensions per year. Excluding the San Diego sector, apprehensions along the entire SW border in this five year period were up by 10%, or 102,000 per year, suggesting that some illegal migrants shifted to other border areas, while others were deterred from crossing the border entirely. This shows that even in the absence of a border fence, a robust cadre of border agents is a good deterrent to illegal immigration, at least in sparsely populated, rough-terrain areas. Government

²⁶ While critics might argue there were fewer apprehensions because there were fewer agents to police the border, this argument is too inconsistent with the trends during that period. It is implausible that a phased reduction by 270 agents over a four-year period would account for this reduced level of arrests.

officials recognized the successes they achieved in San Diego and began incrementally transferring border agents to other high priority sectors between 1998 and 2004. For a while this left the deterrent intact, but eventually staffing reductions became significant enough to weaken the deterrent and apprehensions began increasing again. The deterrent was effective while the number of agents averaged 2,150 (33/mile), and became less effective when it averaged 1,815 (27/mile).²⁷ The increase in apprehensions in the unfenced areas in 2004 may also have been attributable in part to the even greater deterrent then in place in the nearby fenced areas of San Diego, as the next section will show.

C. FENCED BORDER AREAS

The fenced areas of the San Diego sector at this time included two border stations: Imperial Beach and Chula Vista. These stations were centered on the densely populated Tijuana/San Diego border, which by 1995 was home to a combined population of 3.2 million.²⁸ There are no natural terrain features to restrict illegal entry into those two areas, which fall on either side of the Ysidro Port of Entry, the busiest gateway into the United States.²⁹ Before 1990, the U.S. border control strategy in this area focused on apprehending suspects after they crossed the border, which enabled those not being pursued by border agents to get away.³⁰ One tactic frequently utilized by illegal aliens was for large groups—sometimes numbering in the thousands—to mass on the border and wait for nightfall. They would then make a mad dash across the border and quickly blend into suburban areas (Figure 2). Border agents would respond with a “man-on-man”

²⁷ The US Border Patrol conducts 24-hour operations throughout the year. Agents are therefore assigned to one of three eight-hour work shifts. Since most illegal incursions occur at night, a higher percentage of agents are assigned to night-time operations. In a notional scenario where there are 24 agents assigned per mile, half (12 agents) are assigned to night-time operations, while the other twelve agents are divided among the other two shifts, averaging 6 agents a piece. This of course increases the distance that each agent is therefore expected to patrol.

²⁸ Nevins, *Operation Gatekeeper: The Rise of the "Illegal Alien" and the Making of the U.S.-Mexico Boundary*, 80.

²⁹ Lisa M. Seghetti and others, *Border Security and the Southwest Border: Background, Legislation, and Issues* (Washington D.C.: Congressional Research Service, The Library of Congress, [2005]).

³⁰ *Border Control: Revised Strategy is Showing some Positive Results* (Washington DC: Government Accounting Office,[1994]), <http://www.gao.gov/archive/1995/gg9530.pdf> (accessed 23 July 2008).

pursuit, apprehending an estimated average of 1 in 8 of those crossing the border.³¹ Given the ineffectiveness of this strategy, it was determined that barriers were needed to assist law enforcement officials. The fencing, referred to as primary fencing, consisted of sheets of heavy steel gauge matting used in the construction of temporary runways. It was surplus war materiel installed by the U.S. Army Corps of Engineers. San Diego was considered the epicenter of illegal immigration and therefore was the first sector to construct significant fencing.³² The fence formed the centerpiece of the U.S. Border Patrol's strategy of "Prevention through Deterrence." Construction on the fence began in 1990 and was completed by 1993. It measured 10 feet high, stretching 14 of the 66 miles of the border in that sector. In addition to the new staff and technology described above, stadium-style lighting systems in the fenced areas were expanded from 1 mile to 6 miles of coverage. This enhanced night time visibility for law enforcement officers and improved intruder detection along high-traffic areas.



Figure 2. Illegal Aliens Massing on Border³³

³¹ *Border Control: Revised Strategy is Showing some Positive Results* (Washington DC: Government Accounting Office, [1994]), <http://www.gao.gov/archive/1995/gg9530.pdf> (accessed 23 July 2008).

³² *Illegal Immigration: Southwest Border Strategy Results Inconclusive; More Evaluation Needed* (Washington DC: General Accounting Office,[1997]), <http://www.gao.gov/archive/1998/gg98021.pdf> (accessed 31 July 2008).

³³ From *Border Control: Revised Strategy is Showing some Positive Results*, 9.

The Illegal Immigration Reform and Immigrant Act (IIRIRA) of 1996 authorized the construction of a secondary fence to parallel the primary fence. Construction began in 1999 in accordance with design plans recommended by Sandia Laboratory. The secondary fence utilized a finer weave than normal chain linked fences, denying potential climbers hand and toe holds. The fence was angled toward the climber, making it even more difficult to scale (Figure 3). A robust lighting system and interior all weather road were developed to facilitate vehicle pursuits of those who still managed to scale the fence. The cumulative effect was to create a layered and robust barrier system. Due to environmental concerns voiced by the California Coastal Commission, only 9 of the 14 miles authorized by IIRIRA were complete by FY2005. Construction on the secondary fence restarted in August 2008.³⁴



Figure 3. Sandia Fence in San Diego Sector

Apprehensions in fenced areas declined each year from 1992 to 2003, suggesting a sustained and increasing deterrent effect (Table 3). It is impossible to evaluate the effect of the primary fence precisely, because apprehension data is not available for these

³⁴ Leslie Berestein, "Border Fence Across Deep Canyon Will Begin to be Built Next Month," *The San Diego Union-Tribune*, 7 May 2008, http://www.signonsandiego.com/uniontrib/20080507/news_1n7gulch.html (accessed 20 August 2008).

two border stations prior to 1992. However, according to US Border Patrol officials, the decision to construct the fence was a response to sharply increasing apprehensions.³⁵ Therefore, we can attribute the 10% average annual reduction in apprehensions between 1992 and 1995 to the fence and staff increases, although we cannot disaggregate the effects of those two factors, since staffing was growing from at least 1993. This suggests the primary fence did in fact aid in reversing the trend of illegal migration, but it is unclear to what extent. It is clear from the available evidence that the deterrent became stronger after 1995. Between 1995 and 2002 apprehensions fell at an average annual rate of 32%, before becoming essentially flat between 2002 and 2004. This new trend coincided with the launch of Operation Gatekeeper, and preceded the initiation of construction of the Sandia fence. Gatekeeper increased resources across the sector, providing necessary equipment and additional law enforcement agents. While the new equipment was designed to enhance intrusion detection, the additional law enforcement agents improved the human barrier that was deployed in concert with the physical barrier. Between 1993 and 1997, the number of agents grew at an average annual rate of 19%, more than doubling in size, while apprehensions dropped 70%. Construction on the Sandia fence began in 1999 and continued through 2005, averaging 1.5 miles per year. It is impossible to evaluate the impact of the Sandia fence precisely, but it is important to note that as the fence went up, law enforcement agents from San Diego were being reassigned to other sectors. The fact that apprehensions went up slightly in the unfenced areas but not in the fenced areas as staffing declined suggests that the reduction in staffing levels were being offset by the combined effects of the primary and Sandia fences.

FY1992	FY1993	FY1994	FY1995	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004
361,125	321,560	294,766	261,726	186,392	95,669	88,480	43,059	39,268	25,107	14,485	14,763	19,035

Table 3. Apprehensions in Fenced Areas of the San Diego Sector, 1992-2004

Apprehensions in fenced areas did jump in 2004. This may be a result of the more radical decline in staffing in that year, or of broader trends unrelated to border

³⁵ Jason Ciliberti, Supervisory Border Patrol Agent, *Authorized USBP Personnel on SW Border by Sector and Fiscal Year*.

policing -- apprehensions in fenced San Diego and along the SW border as a whole increased by about 20% -- or both. While the number of apprehensions rose, the San Diego sector nevertheless remained at 11-12% of border apprehensions. Overall, apprehensions in the fenced areas of San Diego fell by a staggering 95% between 1992 and 2004. By comparison, apprehensions in unfenced areas during this same period fell by only 41%, while apprehensions in the other eight border sectors were up by 48%. In 1992 the ratio of apprehensions in unfenced to fenced areas of San Diego was 1 to 1.8 (Figure 7). By 1997, when manning peaked, the ratio had reversed to 2:1, and by 2004 the ratio was 6:1, despite a sector-wide reduction in staffing levels. This would indicate the security measures in the fenced areas were a more effective deterrent over the “human barrier” strategy in the unfenced areas, but that enhanced border patrol in unfenced San Diego also presented a much more effective deterrent than was the norm for the border as a whole.

D. CONCLUSION

While it is clear from the above analysis that the security measures implemented in San Diego had a dramatic positive impact on illegal immigration in that sector, it is important to take note of the fact that they had an almost equally negative impact on the rest of the SW border. Most illegal migrants were diverted east from San Diego, rather than prevented from entering the U.S. entirely (Figure 4). Arrests in the neighboring El Centro sector were 30,058 in 1993, compared to 531,689 in San Diego. By 1999 apprehensions in El Centro surpassed those in San Diego. Further to the east in the Tucson sector, the results were even more striking. There, apprehensions jumped from 92,639 in 1993 to 490,771 in 2004. Between 1992 and 2004, San Diego and Tucson essentially changed places, as the former dropped from 44% of total apprehensions to 12%, and the latter increased from 8% to 43%. This would suggest that illegal immigrants perceived the Tucson sector to be less secure, and thus a more permissive environment for illegal migration.

It is also important to note that staffing levels increased significantly in every sector of the border between 1993 and 2004, with the largest increase in Tucson. Indeed, between 1993 and 2004 staffing in San Diego increased by 66%, while staffing in the other eight border sectors increased by 220%. In Tucson the increase was an even more dramatic 633%. However, this represented an increase from roughly 1 agent per mile to 8 agents per mile. Similarly, staffing in El Paso grew from roughly 2 agents per mile to 4 agents per mile. The entire SW border (excluding San Diego) increased from an average density of 1 agent per mile in 1993 to 4 agents per mile in 2004. Thus, nowhere did the density of border patrol come anywhere near to that in San Diego, which was 15 agents per mile in 1993 and 27 agents per mile in 2004.³⁶ As a result, the additional manpower did not create an effective deterrent, and migrants simply shifted from San Diego to other areas along the border. To underscore this point, consider the unfenced portion of the San Diego sector and the Tucson sector. The former was able to achieve a partial deterrent despite the absence of a border fence given its sizeable contingent of border patrol agents. The latter, on the other hand, was unable to create the necessary deterrent given its larger area of operation, where its forces were thinly spread.

³⁶ The density level (agents per mile) is a rough indicator of the amount of law enforcement in a given sector. These numbers are further divided on three 8-hour shifts, which would extend the distance each agent would actually be responsible for policing.

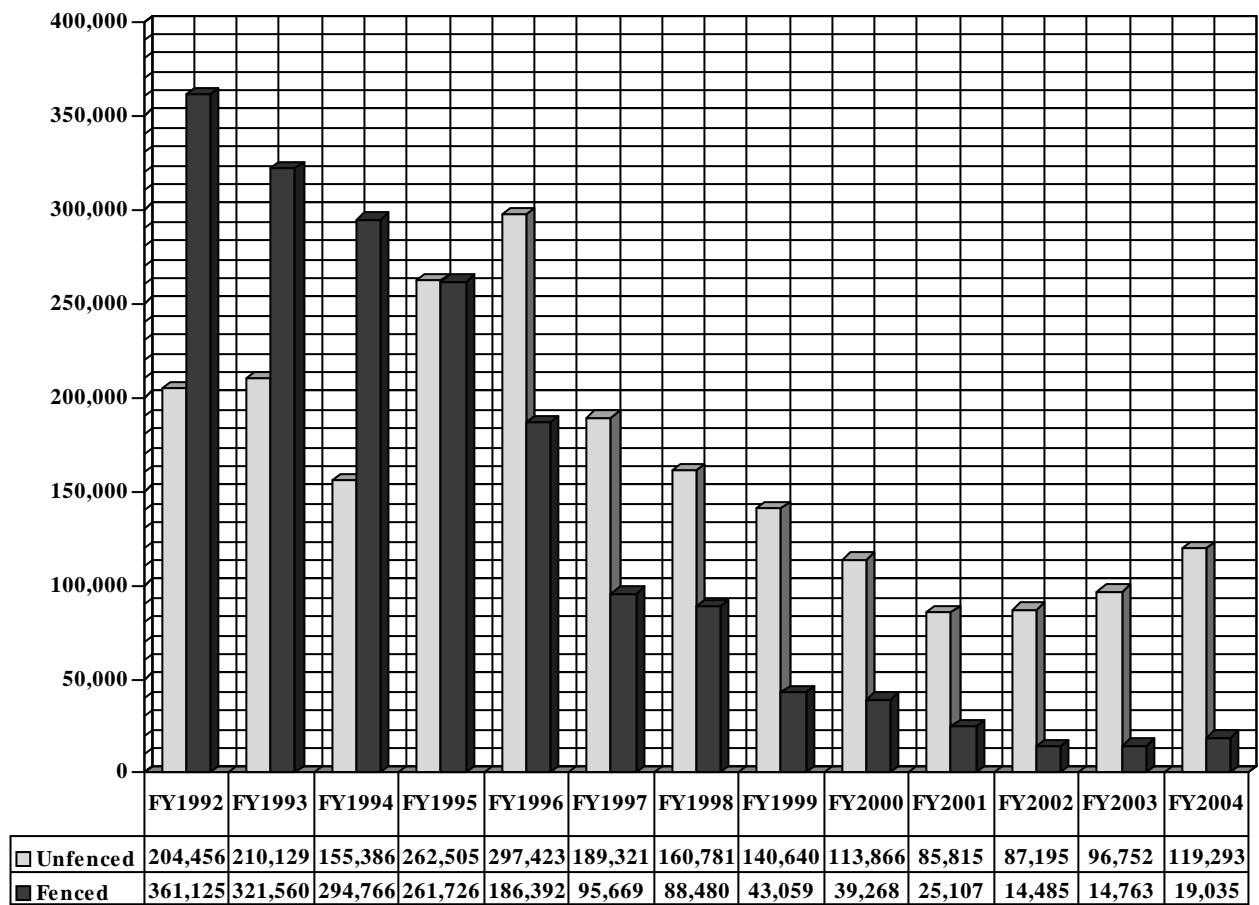


Figure 4. Apprehensions in Unfenced and Fenced Areas of San Diego Sector, 1992-2004

Sector	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
<i>San Diego, CA</i>	531,689	450,152	524,231	483,815	283,889	248,092	182,267	151,681	110,075	100,681	111,515	138,608
EL Centro, CA	30,058	27,654	37,317	66,873	146,210	226,695	225,279	238,126	172,852	108,273	92,099	74,467
Yuma, AZ	23,548	21,211	20,894	28,310	30,177	76,195	93,388	108,747	78,385	42,654	56,638	98,060
Tucson, AZ	92,639	139,473	227,529	305,348	272,397	387,406	470,449	616,346	449,675	333,648	347,263	490,771
EL Paso, TX	285,781	79,688	110,971	145,929	124,376	125,035	110,857	115,696	112,857	94,154	88,816	104,399
Marfa, TX	15,486	13,494	11,552	13,214	12,692	14,509	14,952	13,689	12,087	11,392	10,319	10,530
Del Rio, TX	42,289	50,036	76,490	121,137	113,280	131,058	156,653	157,178	104,875	66,985	50,145	53,794
Laredo, TX	82,348	73,142	93,305	131,841	141,893	103,433	114,004	108,973	87,068	82,095	70,521	74,706
McAllen, TX	109,048	124,251	169,101	210,553	243,793	204,257	169,151	133,243	107,843	89,927	77,749	92,947
Total Southwest	1,212,886	979,101	1,271,390	1,507,020	1,368,707	1,516,680	1,537,000	1,643,679	1,235,717	929,809	905,065	1,138,282

% Apprehensions	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
<i>San Diego, CA</i>	44%	46%	41%	32%	21%	16%	12%	9%	9%	11%	12%	12%
EL Centro, CA	2%	3%	3%	4%	11%	15%	15%	14%	14%	12%	10%	7%
Yuma, AZ	2%	2%	2%	2%	2%	5%	6%	7%	6%	5%	6%	9%
Tucson, AZ	8%	14%	18%	20%	20%	26%	31%	37%	36%	36%	38%	43%
EL Paso, TX	24%	8%	9%	10%	9%	8%	7%	7%	9%	10%	10%	9%
Marfa, TX	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Del Rio, TX	3%	5%	6%	8%	8%	9%	10%	10%	8%	7%	6%	5%
Laredo, TX	7%	7%	7%	9%	10%	7%	7%	7%	7%	9%	8%	7%
McAllen, TX	9%	13%	13%	14%	18%	13%	11%	8%	9%	10%	9%	8%

Table 4. Apprehension Data Itemized by Sector, Year and Expressed as a Percentage of SW Border Total³⁷

³⁷ From "U.S. Border Patrol Apprehension Statistics 1993 – 2004," <http://www.lawg.org/docs/apprehension%20stats.pdf> (accessed 20 August 2008).

Sector	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Del Rio Sector	297	299	399	406	471	589	639	758	893	972	950	933
El Paso Sector	608	643	746	841	918	972	957	1,036	1,086	1,122	1,188	1,094
Laredo Sector	353	337	421	415	451	628	685	806	921	969	1,025	981
Marfa Sector	134	128	133	134	135	164	144	196	194	253	230	239
Rio Grande	393	392	474	507	760	1,107	1,166	1,368	1,451	1,484	1,524	1,439
El Centro	198	194	190	189	249	383	423	502	589	683	755	734
<i>San Diego</i>	<i>992</i>	<i>1290</i>	<i>1433</i>	<i>1,965</i>	<i>2,281</i>	<i>2,274</i>	<i>2,136</i>	<i>2,053</i>	<i>2,004</i>	<i>1,807</i>	<i>1,972</i>	<i>1,651</i>
Yuma	182	182	185	174	175	227	228	313	323	323	358	331
Tucson	287	282	407	702	875	1,013	1,328	1,548	1,686	1,626	1,838	2,104
Total	3444	3747	4388	5,333	6,315	7,357	7,706	8,580	9,147	9,239	9,840	9,506

Table 5. Authorized USBP Personnel on SW Border By Sector and Fiscal Year³⁸

³⁸ From Jason Ciliberti, Supervisory Border Patrol Agent, *Authorized USBP Personnel on SW Border by Sector and Fiscal Year*.

III. THE GAZA FENCE AND THE EVOLVING NATURE OF TERRORISM

A. INTRODUCTION

Nations around the world have experimented with physical barriers to restrict the movement of terrorists in order to discourage, delay or disrupt their ability to strike interior targets (e.g. schools, hospitals, public common areas). France experienced some success in the 1950s when it constructed a fence, complete with minefield, in Tunisia to separate members of the Algerian Liberation Army from their own area of operation in Algeria.³⁹ More recently, Israel has built a fence surrounding the Gaza Strip and is now in the process of building another separation barrier along the West Bank in an attempt to restrict the flow of terrorists from the occupied territories. The Gaza fence has been repeatedly cited as a successful barrier to terrorism, a claim that was central to Israel's justification of the separation barrier currently being built along the West Bank.⁴⁰ Unfortunately, there is no reliable data on the number of terrorists that have successfully breached/bypassed the Gaza fence in a given year. As a result, it is not possible to measure the effect of the Gaza fence on terrorism directly. In addition, the intentions of terrorists groups are influenced by a myriad of factors (e.g. conditions on the ground, political developments, and international involvement) that are independent of the Gaza fence. Consequently, it is impossible to know if a temporary lull in attacks from Gaza in the late 1990s was a result of the defensive features of the fence or other factors, such as the ongoing peace negotiations. Similarly, the skyrocketing of terrorist violence across Israel with the onset of the second intifada in September 2000 was associated with a dramatic increase in motivation to commit terrorist attacks, and this change in conditions masks the impact of the fence – whether positive, zero, or negative -- on the level of

³⁹ Frisch Hillel, "(the) Fence Or Offense? Testing the Effectiveness of 'the Fence' in Judea and Samaria," *Democracy and Security* 3 (2007), 1-19, <http://www.routledge.com/> (accessed May 2008).

⁴⁰ Frisch Hillel, "(the) Fence Or Offense? Testing the Effectiveness of 'the Fence' in Judea and Samaria," *Democracy and Security* 3 (2007), 1-19, <http://www.routledge.com/> (accessed May 2008).; Nurit Kliot and Igal Charney, "The Geography of Suicide Terrorism in Israel," *GeoJournal* 66 (2006).; David Makovsky, "How to Build a Fence," *Foreign Affairs* 83, no. 2 (March/April 2004), 50.

terrorism. Existing analyses by the Israeli government and the Intelligence and Terrorism Information Center at the Israel Intelligence Heritage & Commemoration Center (IICC) argues among other things that the Gaza fence has played an integral role in reducing the number of Israelis killed by acts of terrorism.⁴¹ Yet, these reports begin their analysis in September 2000, the start of the second intifada and five years after the fence was completed. This methodological problem skews their analysis. What's more, these analyses do not take into account adaptation and innovation of terrorist organizations. These reports discount the growing threat of indirect fire weapons (e.g. rockets, mortars) as well as the labyrinth of clandestine tunnels as a means of covert infiltration. While these means of attack/infiltration are still in their infancy and account for a small percentage of those killed by terrorists, their use is growing rapidly, which challenges the conventional wisdom on the effectiveness of the security fence.

B. THE GAZA FENCE

The Gaza fence was built in 1995, completely partitioning Gaza from Israel. It stretches along 45 kilometers of flat terrain void of any natural barriers between the two areas.⁴² The Gaza Strip is a small, but strategic, landmass (approximately 360 square kilometers) connecting Africa and the Middle East, which was occupied by the Israeli Army following the 1967 War.⁴³ In 2005, Israel withdrew its settlers and military forces after a long and costly occupation. The area is now under the control of the Palestinian

⁴¹ Unless otherwise stated, the information in this chapter comes from the following sources: *Anti-Israeli Terrorism, 2006: Data Analysis and Trends* (Israel: Intelligence and Terrorism Information Center at Israel Intelligence Heritage & Commemoration Center (IICC),[2007]), http://www.terrorism-info.org.il/malam_multimedia/English/eng_n/pdf/terrorism_2006e.pdf (accessed 24 September 2008).; *Anti-Israeli Terrorism in 2007 and its Trends in 2008* (Israel: Intelligence and Terrorism Information Center at Israel Intelligence Heritage & Commemoration Center (IICC),[2008]), http://www.terrorism-info.org.il/malam_multimedia/English/eng_n/pdf/terror_07e.pdf (accessed 24 September 2008).; *Israel's Anti-Terrorist Fence: An Overview* (Israel: Israeli Ministry of Foreign Affairs,[2008]), <http://securityfence.mfa.gov.il/mfm/Data/48152.doc> (accessed 2 October 2008).; "The Anti-Terrorism Fence: Facts and Figures (PowerPoint)," State of Israel, http://www.mfa.gov.il/MFA/MFArchive/2000_2009/2003/11/Saving+Lives+-+Israel-s+Security+Fence.htm (accessed Oct 16, 2008).

⁴² Frisch Hillel, "(the) Fence Or Offense? Testing the Effectiveness of "the Fence" in Judea and Samaria," *Democracy and Security* 3 (2007), 1-19, <http://www.routledge.com/> (accessed May 2008).

⁴³ "Zionist Israeli Settlements in the West Bank and Gaza," *The Washington Report on Middle East Affairs* 21, no. 9 (Dec, 2002), 90 (accessed 15 October 2008).

Authority (PA), in accordance with the Oslo Accords of 1993.⁴⁴ It is currently home to nearly 1.5 million Palestinians, making it one of the most densely populated places on earth.⁴⁵ The population is very young with a median age of 16 years, and a population growth rate of 3.6%. Nearly 35% of the population is unemployed and 80% lives below the poverty line. In addition, one million Palestinians—or 2/3 of the population—are internally displaced.⁴⁶ Gross Domestic Product per capita is approximately \$1,100, compared to more than \$25,800 in Israel.⁴⁷ Palestinian officials maintain that the fence has had a significant adverse impact on the economy and exacerbated poor economic conditions in the area. Thus, the fence not only separates Arab from Jew, but “haves” from “have nots.” These combined factors make the Gaza Strip an ideal breeding ground for terrorism.⁴⁸

In the seven years prior to the construction of the Gaza fence in 1995, the level of terrorism in Israel—as measured by the total number of Israelis killed—averaged 38 persons per year.⁴⁹ The average climbed slightly to 39 in the six years following construction, suggesting no direct effect of the fence on terrorism related deaths. Since the onset of the second intifada in September 2000 the average has been 153, but declining steadily from 452 in the peak year 2002 to 13 in 2007 (Figure 5). It is virtually impossible to determine what effect, if any, the fence had after violence spiked. It could be that without the fence the number of terrorist attacks would have been even higher, or

⁴⁴ Seth Orkand, "Coming Apart at the Seamline--the Oslo Accords and Israel's Security at the International Court of Justice and the Israeli Supreme Court," *Gonzaga Journal of International Law* 10:3, no. 391 (Spring, 2007), 406, <http://www.gonzagajil.org/pdf/volume10/Orkand/Orkand.pdf> (accessed 1 October 2008).

⁴⁵ David Margolis, "Denseness Over Density," *The Jerusalem Report* (August 23, 2004), 47.

⁴⁶ "The World Fact Book: The Gaza Strip," Central Intelligence Agency, <https://www.cia.gov/library/publications/the-world-factbook/geos/gz.html> (accessed September 25, 2008).

⁴⁷ "The World Fact Book: Israel," Central Intelligence Agency, <https://www.cia.gov/library/publications/the-world-factbook/geos/is.html> (accessed October 7, 2008).

⁴⁸ Paul R. Ehrlich and Jianguo Liu, "Some Roots of Terrorism," *Population and Environment* 24, no. 2 (November 2002), 183.

⁴⁹ These numbers include all of Israel and the occupied territories. "Fatalities in Palestinian Terror Attacks since 1967," Jewish Virtual Library, <http://www.jewishvirtuallibrary.org/jsource/Peace/osloterr.html> (accessed September 2008).

that the number would have been lower in the absence of the adverse economic impact of the fence on the Gaza population, or that the number would have been the same. In addition, associating terrorist incidents with the protective features of the Gaza fence is very difficult. A suicide bomber departing from the West Bank to attack a crowded market place in Tel Aviv can be assumed to be entirely unaffected by a separation barrier located outside of his or her route of travel. However, an attack against Israeli soldiers located in Gaza (before the occupation ended in 2005) may indicate a deterrent effect of the fence, since it occurred in Gaza rather than Israel. Yet even in this scenario it is impossible to know all the factors that influenced the terrorists strike, and therefore difficult to draw any conclusions without information about the intentions and planning factors of the terror groups conducting the attack. Similarly, while there appears to have been a general decline in terrorism between 1996 and 1999, which might be attributed to the fence, it is impossible to isolate this potential effect from that of other factors, especially the ongoing political negotiations. Overall, while the available evidence is inconclusive, it certainly calls into question the claimed counter-terror contribution of the Gaza fence.

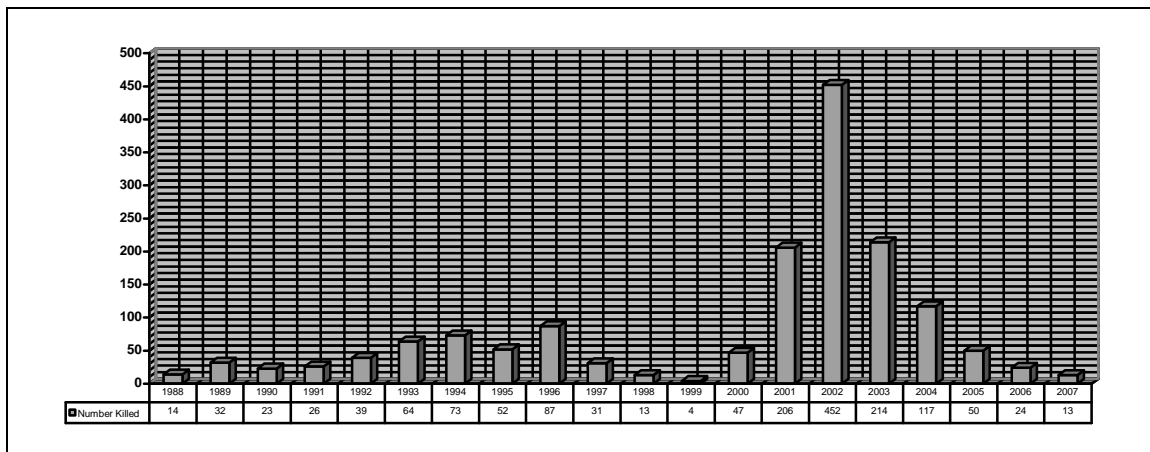


Figure 5. Number of Israelis Killed by Acts of Terrorism, 1988-2007⁵⁰

⁵⁰ In 1993 38 were killed before the Oslo Agreement, and 26 were killed after the Oslo Agreement. These attacks could have occurred in Israel or the occupied territories. These numbers include all of Israel and the occupied territories. From "Fatalities in Palestinian Terror Attacks since 1967," Jewish Virtual Library, <http://www.jewishvirtuallibrary.org/jsourc/Peace/osloterr.html> (accessed September 2008).

C. ADAPTATION AND INNOVATION

There have been several publicly reported incidents of Palestinian terrorists breaching the Gaza fence directly during periods of elevated hostilities. In 2002, during the height of the second intifada, Hamas terrorists infiltrated through the Gaza fence into Israel to conduct military strikes against Israeli forces.⁵¹ In 2005 terrorist again breached the perimeter in two separate incidents to conduct similar attacks.⁵² Israelis were killed and military equipment destroyed. These operations suggest that terrorists are capable of bypassing the security features of the Gaza fence when sufficiently motivated to do so, though without data on failed breaches it is impossible to evaluate how effectively they have done so.

More significant than these isolated cases of breaching the fence, is the increase in the use of alternative means of attack. Hamas and other terrorist networks responded to the Gaza fence by creating simple but effective ways to get around it in an effort to marginalize its effectiveness. These adaptations included firing rockets (and mortars) over the fence and digging tunnels under the fence. Scholars refer to this sort of innovation as the substitution effect.⁵³ As governments tighten security in one area (e.g. construct border fences), terrorist groups strike elsewhere or in a new manner that is more adapted to the new array of vulnerabilities. Rockets and mortars have enabled terrorist groups to continue their campaign against Israel, side-stepping the border entry problem. Tunnels have become another way to get around the fence. These tunnels—secretly connecting Gaza to the Sinai (Egypt) and Israel—are extremely complex and intricate. Terrorist organizations have used them to rearm through Egypt and strike at targets

⁵¹ Frisch Hillel, "(the) Fence Or Offense? Testing the Effectiveness of "the Fence" in Judea and Samaria," *Democracy and Security* 3 (2007), 1-19, <http://www.routledge.com/> (accessed May 2008).

⁵² "Suicide and Other Bombing Attacks in Israel since the Declaration of Principles (September 1993)," Israeli Ministry of Foreign Affairs, [http://www.mfa.gov.il/MFA/Terrorism-+Obstacle+to+Peace/Palestinian+terror+since+2000/Suicide+and+Other+Bombing+Attacks+in+Israel+Sin ce.htm](http://www.mfa.gov.il/MFA/Terrorism-+Obstacle+to+Peace/Palestinian+terror+since+2000/Suicide+and+Other+Bombing+Attacks+in+Israel+Since.htm) (accessed September 2008).

⁵³ Enders, Walter and Todd Sandler. "What do we Know about the Substitution Effect in Transnational Terrorism?" Alabama, California, <http://www-rcf.usc.edu/~tsandler/substitution2ms.pdf> (accessed October 7, 2008).

within Israel. The combination of these new tactics indicates important adaptations to the Gaza fence that limit its effectiveness.

The combination of the fence and the withdrawal of IDF forces from Gaza in 2005 made rockets and mortars the “weapon of choice.”⁵⁴ These rockets have a small warhead, are fairly inaccurate, and have a range of only approximately 6 miles. However, their advantage is that Qassam rockets are low tech devices that can easily be manufactured in Gaza. They have transformed the campaign against Israel from the relative safety of the Gaza Strip, now under the jurisdiction of the Palestinian Authority.⁵⁵ Hamas’ first rocket attack occurred in April 2001 and since that time thousands of rockets/mortars have fallen on Israel from Gaza (Figure 7).⁵⁶ The occupation limited the growth of this new type of attacks as long as it lasted because the IDF was trained and equipped to quickly detect and respond to indirect fire. Once launch is detected, it was able to identify the rocket’s point of origin and dispatch forces to that location in hopes of capturing the terrorist. Hamas achieved some operational success in 2004 when it surged its rocket/mortar campaign, resulting in the first rocket-related fatalities.⁵⁷ Four Israelis were killed, but more than 130 Palestinian operatives were killed by the IDF response.⁵⁸ As a result, rocket/mortar attacks dropped back to the 2003 level in 2005, and grew significantly only after the IDF withdrawal. The total number of Israelis killed by terrorist attacks of all kinds dropped from 452 in 2002, the peak of the second intifada, to 13 in 2007. During this same period, the number of rockets/mortars fired from Gaza shot up from 292 to 1,645. Between 2004 and 2007, a total of 204

⁵⁴ *Anti-Israeli Terrorism in 2007 and its Trends in 2008*, 26.

⁵⁵ Leslie Susser, "Answering the Qassams," *The Jerusalem Report*, sec. Israel, July 26, 2004 (accessed Oct 10, 2008).

⁵⁶ "The Hamas Terror War Against Israel," Israeli Ministry of Foreign Affairs, <http://www.mfa.gov.il/MFA/Terrorism-+Obstacle+to+Peace/Palestinian+terror+since+2000/Missile+fire+from+Gaza+on+Israeli+civilian+targets+Aug+2007.htm#statistics2008>).

⁵⁷ "Qassam Rocket," GlobalSecurity.Org, <http://www.globalsecurity.org/military/world/para/hamas-qassam.htm> (accessed December 3, 2008).

⁵⁸ Ibid.

Israelis were killed. Of that 204, only 16 (or 12.75%) were killed due to indirect fire.⁵⁹ This suggests that while terrorist were able to adapt to the fence and innovate tactically, their new tactics have not yet proven as effective as the earlier ones. In other words, rocket/mortar attacks lack the killing-power of other types of attacks (e.g., suicide bombers).

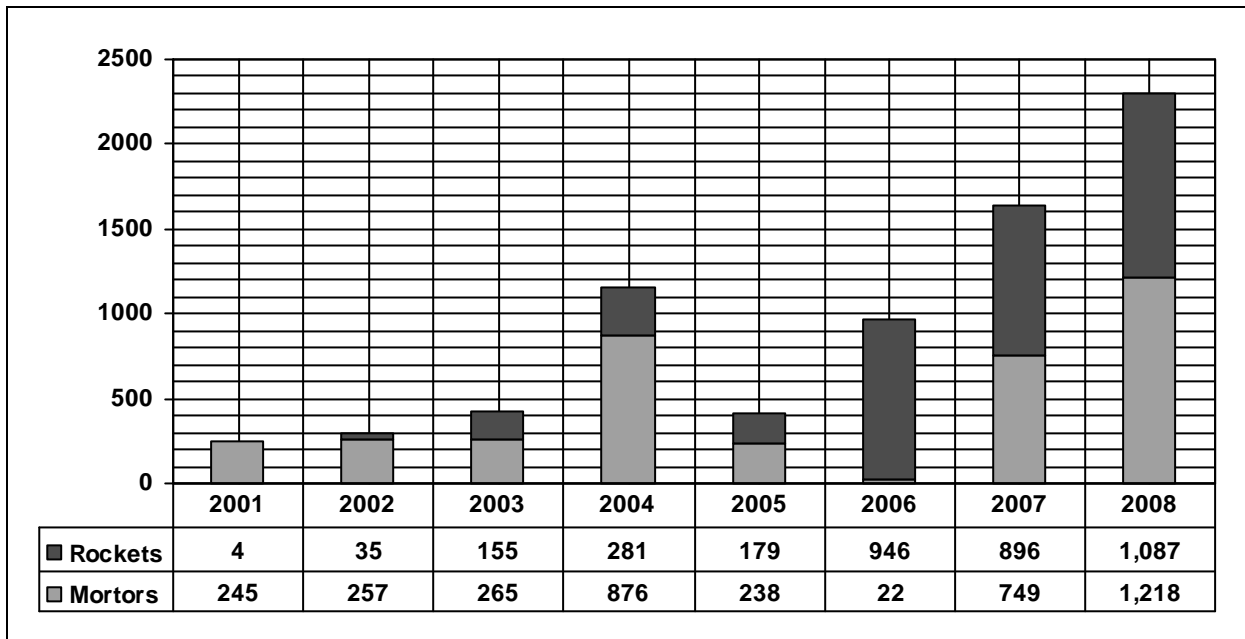


Figure 6. Mortar and Rocket Attacks from Gaza, 2001-2008⁶⁰

However, rockets/mortars have had a demoralizing effect on communities within their flight path disproportionate to their destructive impact. The people of Sderot and surrounding communities have been affected by persistent rocket fire from the Gaza Strip (Figure 5). In this way, they may feel more terrorized. In 2004, the mayor of the small border town expressed great concern over the increasing rocket fire and its influence on the citizens in that town, concluding: “if Sderot becomes a ghost town, the terrorists will

⁵⁹ *Anti-Israeli Terrorism, 2006: Data Analysis and Trends; Anti-Israeli Terrorism in 2007 and its Trends in 2008.*

⁶⁰ From *The Hamas Terror War Against Israel*.

have won a greater victory than they ever dreamed of.”⁶¹ An excerpt taken from a government website characterized these attacks this way:

Rocket and mortar shell fire is relatively less lethal than suicide bombing attacks but has a devastating effect on the daily life and sense of security of the 200,000 residents of the western Negev. The damage done by rockets to the civilian population of Sderot and other western Negev population centers cannot be measured only statistically in terms of dead and wounded. Studies done in recent years showed that the continued rocket fire and the large number of shock victims have led to post traumatic stress disorder among many of Sderot's residents (close to 30%). It influences their mental health and seriously damages the quality of their lives.⁶²

While the town of Sderot has been the target of nearly half of all rocket/mortar attacks, other communities have also been affected. The town of Ashkelon has been a target of more advanced rockets with a slightly longer range. In May 2008, a Grad rocket hit a busy shopping mall, resulting in the injury of 90 innocent civilians.⁶³ As more advanced rockets flow into Gaza, rockets that can travel a greater distance will threaten a growing number of Israeli communities. Hamas has already achieved some operational success in Sderot and Ashkelon, and will likely refine their manufacturing techniques to improve their payload and range. With each passing day the Gaza fence becomes less relevant.

⁶¹ Leslie Susser, "Answering the Qassams," *The Jerusalem Report*, sec. Israel, 26 July, 2004 (accessed October 10, 2008).

⁶² *The Hamas Terror War Against Israel*.

⁶³ Ibid.

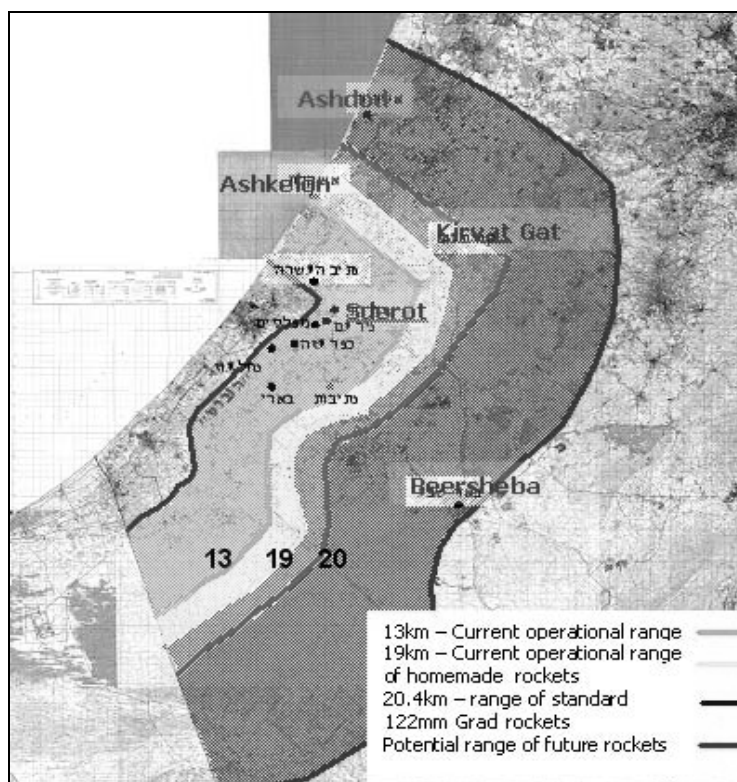


Figure 7. Israeli communities within Range of Rocket Fire from Gaza⁶⁴

Tunnels are everywhere in Gaza, bypassing the security features of the fence and normal customs controls. It is not clear how many tunnels currently exist. Between 2000 and 2003 more than 100 tunnels connecting Gaza and Egypt were reportedly destroyed by the IDF.⁶⁵ They were primarily used to smuggle goods and equipment from Egypt to Gaza, and have become crucial to the resupply efforts necessary for offensive operations against Israel. Between 2005 and 2006 the illicit importation of explosives was estimated to have increased from 6 tons to 28 tons, rifles increased from 9,300 to 14,000 and ammunition increased from 2 millions to 5 million rounds. More advanced weapons have also been reported to be moving through these tunnels as part of a military buildup in Gaza, including Russian- and Egyptian-made rockets and anti-tank weapons, which are increasingly jeopardizing Israeli forces. In 2007 an Israeli government report

⁶⁴ From *The Hamas Terror War Against Israel*.

⁶⁵ Almog, Doron Major General, "Lessons of the Gaza Security Fence for the West Bank," Jerusalem Center for Public Affairs, <http://www.jcpa.org/brief/brief004-12.htm> (accessed September 23, 2008).

acknowledged that the IDF discovered and destroyed an additional 13 such tunnels. In mid-2008 the number of tunnels linking Gaza to Egypt and Israel was estimated to be in the hundreds (Figure 7).⁶⁶

Tunnels have also been used in conjunction with high explosives to destroy Israeli equipment and infrastructure. On several occasions, Hamas terrorists tunneled beneath IDF outposts and detonated high explosives in order to destroy fortifications and infrastructure.⁶⁷ Terrorist have also been known to use these tunnels in the course of infiltration operations into Israel to conduct direct attacks. In 2007, terrorists conducted a high-profile attack by entering into Israel through a tunnel approximately 800 meters long. They conducted a surreptitious attack against IDF forces, killing two and wounding three. The attackers destroyed two armored vehicles and an observation post, before abducting an IDF soldier and retreating through a hole in the Gaza fence. These types of operations go a long way to undermine the faith and confidence of the Israeli people in the effectiveness of the Gaza fence. The operational successes achieved through the use of tunnels embolden terrorist to use them in future operations. However, despite the widespread use of tunnels, terrorist-related fatalities continue to drop. Tunnels, like rockets/mortars, have not been associated with a significant number of deaths to date, but may prove important in some future uprising.

⁶⁶ "Gaza Tunnels 'Become an Industry'," *BBC*, sec. Middle East, 16 October, 2008, http://news.bbc.co.uk/2/hi/middle_east/7673926.stm (accessed October 28, 2008).

⁶⁷ *Suicide and Other Bombing Attacks in Israel since the Declaration of Principles (September 1993)*; "Victims of Palestinian Violence and Terrorism since September 2000," Israeli Ministry of Foreign Affairs, <http://www.mfa.gov.il/MFA/Terrorism> (accessed October 8, 2008).



Figure 8. Tunnels Connecting Gaza and Egypt⁶⁸

E. CONCLUSION

The Gaza fence has been viewed by many in the Israeli government as a success in terms of restricting the flow of terrorists into Israel. However, it is unclear what operational success the fence has actually had. The ability to infiltrate into Israel may (or may not) have been reduced, but terrorist groups have adjusted to the new environment. Ironically, the Gaza fence encouraged terrorist groups to go underground: literally to dig and use subterranean tunnels as a means of smuggling equipment and operatives into and out of the Gaza Strip. The combination of the Gaza fence and the withdrawal of the IDF similarly led to the widespread use of indirect fire weapons such as rockets/mortars by groups such as Hamas. Yet these innovations have yet to achieve any significant increase in the number of Israeli fatalities. As the number of rocket/mortar strikes increased, the overall number of fatalities decreased, suggesting a reduced terrorist capability.

⁶⁸ From *Gaza Tunnels 'Become an Industry.'*

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IV. CONCLUSIONS

The analysis of the San Diego fence suggests that fencing can be an effective deterrent to illegal immigration, in coordination with other border security tools. The initial primary fence had little impact on the level of illegal immigration, but as more agents were introduced and capture became more likely the number of illegal border crossings declined dramatically. The analysis of the Gaza fence was not able to establish whether or how much of an effect that fence had on the level of terrorism, but was able to establish a clear pattern of adaption by terrorists. As soon as the Gaza fence went up, excavation on the tunnels began. These tunnels enhanced weapons smuggling and terrorist infiltration operations, and spurred the importation and local manufacture of indirect fire weapons that could deliver high explosives over the fence.

Before the implications of these findings for the likely efficacy of the new U.S. border fence can be identified, several fundamental contextual differences need to be taken into account. First, the San Diego fence was partial, and the Gaza fence total. The partial San Diego fence directed illegal migration away from the San Diego sector when combined with the proper staffing levels of USBP, but only by shifting illegal migration to less secure areas of the border. Thus, while fencing and staffing increases achieved a very large effect locally, they did nothing to reduce illegal immigration across the border overall, since aliens simply went around the fence. In contrast, the Gaza fence provided 100% containment, and produced much more dramatic innovations by those effectively enclosed by it. The different responses to the two fences may be largely attributable to the partial versus comprehensive nature of the fences. Terrorists operating in Gaza had little choice but to innovate. Illegal aliens attempting to enter the U.S. were not forced to innovate, because they had the easier alternative of going around the partial fence. Had the circumstances been reversed, there may have been more tunneling in the US and less tunneling and fewer rocket/mortar attacks in Gaza.

Secondly, the two border regions vary dramatically in the permissiveness of the environment, with potentially significant implications for how terrorists are deterred. Israel and Gaza have a long and troubled past, with limited economic interdependence. The Israel-Gaza border is a non-permissive environment, akin to a demilitarized zone. Israeli security forces take offensive actions and terrorists operating in that border-region are therefore under greater pressure to conceal their efforts. They run the risk of getting shot or killed upon detection, thus jeopardizing their larger mission. The United States and Mexico, on the other hand, are on friendly terms with one another and share enormous economic interests. Their border region is a permissive operating area, where violence is rare despite frequent border incursions. Terrorist operating on the U.S.-Mexican border could more easily exploit its permissive environment. The USBP takes all suspects into custody on the initial presumption that they are migrant workers. They do not fire their weapons unless seriously provoked. When an arrested illegal border crosser does not appear to be Mexican or Central American, further investigation by U.S. authorities takes place after arrest and before release. If the border crosser is in fact a would-be terrorist or can be linked to terrorist's network, this could result in U.S. intelligence that preempts the intended attack. Thus, despite the different levels of permissiveness, terrorists' calculations may actually be more similar than different. They are likely to use risk mitigation strategies at both the U.S.-Mexican and Israeli-Gaza borders to minimize their exposure and preserve mission integrity.

Third, the border patrol strategies in Gaza and San Diego were dramatically different. Up to 2005, the Israeli border patrol strategy focused on using aggressive military tactics on the both sides of the fence. The military occupation of the Gaza Strip was able to contain terrorism, reducing its frequency and effect. The withdrawal of Israeli forces in 2005 from that area hastened the use of rockets and mortars and the use of subterranean tunnels. By contrast, the San Diego border patrol strategy relied upon civil policing tactics on the U.S. side of the border exclusively. It entailed deploying border agents—in concert with high-tech sensors—along frequently traveled routes. These sensors could detect groups of illegal immigrants more precisely and efficiently vector agents to their position, resulting in their arrest. These different strategies

reflected the different goals of the two fences: deterring small numbers of would-be terrorists versus deterring large numbers of illegal migrant workers. The patrol strategy in each case was the appropriate one for the specific objective. The superficial implications of this finding would be that if the objective of the new U.S. border fence is to deter both illegal migrant workers and terrorists, then it would need to adopt the a hybrid of the San Diego and Gaza strategies. However, militarization of the friendly and permissive environment on the U.S.-Mexico border would clearly create more problems than it solved.

With all of these caveats, it is reasonable to conclude based on the analysis of San Diego and Gaza that both illegal migrants and terrorist are likely to adapt to the new fence. They can be expected to shift to unfenced areas of the border where the fewest number of agents guard the international divide, marking the path of least resistance. These tend to be remote areas that are difficult to get to on foot. However, in these areas sensors such as cameras and ground radars will provide enhanced indications and warnings of illegal border crossings, and facilitate a high rate of capture, despite the absence of a fence. To the extent that border patrol proves an effective dragnet in the gaps in the new fence, illegal aliens and terrorists can be expected to employ strategies to marginalize the effects of the new border fence in other ways. That would likely involve digging networks of tunnels to bypass the complex layered defense of physical barriers, sensors and border patrol agents.

It is for these reasons that the issue of border patrol is critical. The lessons from San Diego suggest that the fence achieved its intended effect when the number of border agents was sufficient to respond to the vast influx of illegal aliens. In the case of San Diego, that figure hovered around 27 agents per mile. The Tucson sector, despite its enormous increase from 1 agent per mile to 8 agents per mile, did not achieve a sufficient level to deter illegal immigrants in that sector; these agents were simply dispersed too far apart. The Gaza fence also indicated the importance of effective border patrol in conjunction with the fence—in this case the IDF. As a result, some new approach is therefore needed; one that mixes the lessons-learned of San Diego and Gaza, where

policing strategies and techniques can be fashioned in a more effective manner to respond to the divergent challenges of illegal immigration and terrorism along the U.S.-Mexican border.

The research conducted for this thesis was ultimately unable to answer the research question reliably, and thus the likely impact of the new fence on both illegal immigration and terrorism remains unknown. However, it is clear from this research that effect of the new border fence will be closely tied to establishing and maintaining a sufficient cadre of border patrol agents *on both sides* of the border. For the United States, that entails fostering a closer relationship to Mexico to focus greater attention on conducting operations from their side of the border to deter/detect illegal immigration and pending acts of terrorism. Further research is therefore needed on what that cooperation may look like and consider legal, organizational and doctrinal aspects, before a final conclusion can be reached on the likely effectiveness of the new U.S. border fence.

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